CLAIMS

What is claimed is:

1. A memory module comprising,

a plurality of memory circuits;

a plurality of data lines coupled to the plurality of memory circuits, the plurality of data lines transfer data to and from the plurality of memory circuits;

a switching device coupled to at least one of the plurality of data lines; and

wherein the switching device selectively operates to simulate a hardware error on at least one of the plurality of data lines based on an input signal from a control logic external to the memory module.

2. The memory module of claim 1 wherein the memory circuits are packaged memory circuits, and wherein the switching device is attached to an outer surface of the package of one of the plurality of memory circuits.

3. The memory module of claim 1 wherein the switching device electrically floats the at least one of the plurality of data lines.

4. The memory module of claim 1 wherein the switching device drives the at least one of the plurality of data lines to a high voltage level.

5. The memory module of claim 1 wherein the switching device drives the at least one of the plurality of data lines to a low voltage level.

6. A method comprising:

receiving a request by a control logic to simulate a hardware error on a data line of a memory module; and

simulating the hardware error on the data line by a switching unit on the memory module.

7. The method of claim 6 further comprising sending instructions to inject the error to the control logic from an application executing in a computer system coupled to the memory module.

8. The method of claim 7 comprising sending the instructions on a communication bus.

9. The method of claim 8 comprising sending the instructions on an inter-integrated circuits (I^2C) communications bus.

10. The method of claim 6 wherein simulating the hardware error comprises driving a high voltage on the data line in the memory module to simulate a stuck-at-1 hardware error.

11. The method of claim 6 wherein simulating the hardware error comprises electrically floating a data line in the memory module to simulate a stuck-open hardware error.

12. The method of claim 6 wherein simulating the hardware error comprises electrically grounding the data line in the memory module to simulate a stuck-at-0 fault.

13. The method of claim 6 wherein simulating the hardware error comprises simulating a hardware error for a predetermined amount of time, the simulated hardware error being one selected from the group consisting of a stuck-at-1 hardware error, a stuck-at-0 hardware error, and a stuck-open hardware error.

14. A system comprising:
a central processing unit (CPU);
a memory coupled to the CPU;

control logic coupled to the memory and operable to enable operation of a switching device coupled to a memory module to simulate a hardware error in the memory module.

15. The system of claim 14 wherein the switching device is operable to apply a high voltage level to a data line in the memory module.

16. The system of claim 14 wherein the switching device is operable to apply a low voltage level to a data line in the memory module.

17. The system of claim 14 wherein the switching device electrically floats a data line in the memory module.

18. The system of claim 14 wherein the control logic initializes and maintains a counter of the number of hardware errors to simulate in memory module.

19. The system of claim 14 wherein the control logic initializes and maintains a timer of the duration of hardware errors to simulate in the memory module.

20. A system comprising:

a plurality of means for storing data, wherein at least one the means for storing data is integrated with a means for driving a simulated hardware error;

a plurality of means for transferring data to and from the plurality of means for storing data; and

wherein the means for driving is operable to one of drive a voltage and electrically float at least one of the plurality of means for transferring data.

21. The system of claim 20 wherein the means for driving applies a voltage based on a request from a software application.

22. The system of claim 20 wherein the means for driving further comprises a means for interfacing with a communications bus.